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10/519,766	07/28/2006	**Bernd Schultheis**	VO-713	7255

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PAULEY PETERSEN & ERICKSON
2800 WEST HIGGINS ROAD
SUITE 365
HOFFMAN ESTATES, IL 60195

EXAMINER	
BANH, DAVID H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,766	SCHULTHEIS ET AL.	
	Examiner	Art Unit	
	DAVID BANH	2854	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/11/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 15 and 30 are objected to because of the following informalities: The recitation "at least one liquid-cooled contact roller of the cooling device **35** at least one of rolls off on the transfer medium **34**" contains grammatical errors that make the scope of the limitation difficult to ascertain. Reverting to the original language of claim 15 would improve the readability of the limitation with necessary changes to preserve the current scope of the invention. Appropriate correction is required.

2. Claims 18 and 32 are objected to because of the following informalities: Claims 18 and 32 recite "the photoconductor **32** of the print unit **30**", however, there is no antecedent basis for a photoconductor in any parent claim. Appropriate correction is required.

3. Claim 19 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19 is identical in scope to claim 3 as claims 3 and 19 differ only by the limitation that a temperature is less than or equal to 60 degrees Celsius found in claim 4 but not claim 19, however, this limitation is moot in view of the additional limitation that said temperature is less than 40 degrees Celsius.

4. Claim 29 is objected to because of the following informalities: The recitation "temperature sensors **21** arranged over an entire print width" lacks

antecedent basis. It appears that claim 29 should be rewritten as dependent on claim 28. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4-7, 20-23, 25 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Thompson et al. (US Patent 5,640,659).

For claim 1: Thompson et al. teaches a printing device with an electrophotographic print unit (column 2, lines 20-21, electrophotography system) to which a transfer medium (column 3, lines 34-40, first transfer roll "FTR" **24** and column 3, lines 57-65, second transfer roller "STR" **32**) for transferring a toner powder (column 2, lines 34-40, dry powder or liquid toner) to a substrate (column 3, line 40, paper) in a transfer zone (Figure 1, contact between **24** and **32** and paper) is assigned, the substrate is conducted through the transfer zone by means of a transport system (column 3, line 40, fed from paper supply), wherein heat energy is introduced to the substrate by means of at least one heating element (column 3, line 42, lamp **30**) and a cooling device is assigned to the transfer medium (column 4, line 8, cooling means **36**). As the structure of the invention taught by Thompson et al. covers all of the limitations of the claimed

invention, it is capable of maintaining the transfer medium at a lower temperature than the substrate at least one area of the contact face.

For claims 5 and 21, Thompson et al. teaches that the substrate is placed on an electrically conductive base (column 3, line 56, **32**) with the charge of the toner and the charge of the base in a reverse polarity (column 3, line 62-63, electrically biased with polarity, also column 1, line 37-45, paper is given charge opposite to toner).

For claims 6 and 22, Thompson et al. shows that the substrate is moved beyond the transfer medium synchronously with respect to the circumferential speed of the transfer medium (column 3, line 57, the first and second transfer cylinders sandwich the paper and are transfixed on it, thus driving it, **24** and **32**).

Thompson et al. also teaches that a charge that is opposite to the charge of the toner is applied to the transfer medium (column 1, lines 13-25, since the toner is attracted to the transfer medium electrically, the charges must be opposite).

For claims 7 and 23: Thompson et al. teaches that the transfer medium has a top coat of fluorosilicone rubber (column 4, lines 26-28), which is anti-adhesive (column 4, lines 55-60, easy release of even tacky polymers) and has a surface energy within a range of 15 mN/m and 30 nN/m.

For claim 25, Thompson et al. teaches that the substrate is heated to a temperature by an upstream located temperature process (column 3, lines 40-43, the lamp heats before the paper arrives at the transfixing point).

For claim 32: Thompson et al. teaches that the cooling unit cools the transfer medium downstream of the transfer zone and upstream of the photoconductor

(see Figure 1, wherein cooling unit **36** cools between the transfer zone and the photoconductor **20**).

Claim Rejections - 35 USC § 103

7. Claims 2, 3 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659).

For claims 2, 3 and 19: Thompson et al. teaches all of the structural limitations recited in these claims and parent claim 1. The cooling means **36** is capable of reducing the temperature of the transfer roller to under 40 degrees Celsius. It would have been obvious to one of ordinary skill in the art to use the cooling device to cool the transfer medium to any normal temperatures required through ordinary routine experimentation.

8. Claims 8, 9 and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659), as applied to claims 7 and 1 above, respectively, and further in view of Ogawa (US PG Pub 2003/0007055).

For claim 8 and 24, Thompson et al. teaches all of the limitations of claims 8 and 24 as dependant on parent claims 7 and 1 respectively. While Thompson et al. teaches a lamp for heating the surface of the roller and the substrate, it does not specifically teach an infrared heater. However, Ogawa teaches that heaters in a printing machine that are preferable infrared heaters (page 5, paragraph 66, **46** and **47**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an infrared heater to heat the substrate and the surface of the roller as an infrared heater will be able to evenly and gently heat the surfaces.

For claim 9, Thompson et al. teaches that the substrate is heated to a temperature by an upstream located temperature process (column 3, lines 40-43, the lamp heats before the paper arrives at the transfixing point).

9. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659) and Ogawa (US PG Pub 2003/0007055) in view of Wyble (US Patent 6,322,187).

For claims 10-11, the combination of Thompson et al. and Ogawa teaches all of the limitations of these claims as found in parent claim 9. The combination does not teach heating the surface of the substrates to a specific temperature on at least certain areas of the surface. However, Wyble teaches a substrate that is suitable of exposure to temperatures of about 150 degrees Celsius and thus the heating of a substrate to those temperatures (column 10, lines 8-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the heater as provided in the teachings of Thompson et al. and Ogawa to heat a substrate to around 150 degrees Celsius to facilitate the development of a liquid crystalline phase within the ink.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659), Ogawa (US PG Pub 2003/0007055) Wyble (US Patent 6,322,187) as applied to claim 11 above, and further in view of Spychalla et al. (US Patent 5,908,000).

The combination of Thompson et al., Ogawa and Wyble teaches all of the limitations of claim 12 as found in claim 11 above. The combination does not teach a temperature sensor assigned to the substrate and at least one of the

heating element or the transport system being controlled by a control device as a function of the signal emitted by the temperature sensor. However, Sypchalla et al. teaches a temperature sensor assigned to the substrate (column 2, lines 15-20, sensor directed at ink on the substrate) and the heating system is controlled by a control device as a function of the signal emitted by the temperature sensor (column 2, lines 18-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to teach a control device for controlling a heating system based on signals emitted by a temperature sensor for the purpose of controlling the temperature and maintaining it at a desirable level.

11. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659), Ogawa (US PG Pub 2003/0007055), Wyble (US Patent 6,322,187) and Spychalla et al. (US Patent 5,908,000) as applied to claim 12 above, and further in view of Moslehi et al. (US Patent 5,156461).

For claim 13: The combination of Thompson et al., Ogawa, Wyble and Spychalla et al. teaches all of the limitations of claim 13 as found in claim 12 above. The combination does not that teach a plurality of temperature sensors arranged over the entire print width and that a heating element assigned to each of the temperature sensors with a heating output that is separately controlled within zones over a print width. However, Moslehi et al. teaches a plurality of temperature sensors arranged over the entire print width (see abstract, temperature sensor **200**) each associated with heating elements (column 19,

claim 3, multi-zone lamp) where the heating output is separately controlled within zones (column 19, claim 3, heating multiple predetermined regions).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include multiple temperature sensors for sensing across the entire print width of the web with associated heating elements for separately controlling the zones to provide more controlled readings of the web temperature and for bringing each region of the web up to the optimum temperature for printing.

For claim 14: Spychalla et al. also teaches that the printing device is a pyrometer (see abstract, pyrometer **200**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use pyrometers as they can detect the temperature without substantially interfering with the operation of the press.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659), Ogawa (US PG Pub 2003/0007055), Wyble (US Patent 6,322,187), Spychalla et al. (US Patent 5,908,000) and Moslehi et al. (US Patent 5,156461) as applied to claim 14 above, and further in view of Kurz (US Patent 5,375,518).

The combination of Thompson et al., Ogawa, Wyble, Spychalla et al. and Moslehi et al. teaches all of the limitations of claim 15 as found in parent claim 14. The combination does not teach that the cooling device comprises a liquid-cooled contact roller that rolls off the transfer medium and that climate-controlled air flow is directed onto the surface of the transfer medium. However, Kurz

teaches a liquid-cooled contact roller that rolls off another roller to cool it (column 5, lines 64-68 and column 6, lines 1-55, cold water **80** and roller **107**) and a climate-controlled air flow that is directed onto the surface (column 3, lines 34-56, blowers **60**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the cooling elements taught by Kurz into the printing system taught by the combination of Thompson et al., Ogawa, Wyble, Spychalla et al. and Moslehi for the purpose of maintaining the system at a moderate temperature.

13. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659), Ogawa (US PG Pub 2003/0007055), Wyble (US Patent 6,322,187), Spychalla et al. (US Patent 5,908,000), Moslehi et al. (US Patent 5,156461) and Kurz (US Patent 5,375,518) as applied to claim 15 above, and further in view of Watanabe (US PG Pub 2002/0110391).

For claims 16: The combination of Thompson et al., Ogawa, Wyble, Spychalla et al., Mslehi et al. and Kurz teaches all of the limitations of claim 16 as found in claim 15 above. The combination does not teach that the transfer roller contains at least a portion of the cooling device. However, Watanabe teaches a transfer roller for a transfer medium that is internally cooled by air (page 12, paragraph 176, **206a**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a transfer medium internally cooled by air for the purpose of maintaining the transfer medium at a desired temperature.

For claim 17: Watanabe teaches that the transfer medium is cooled internally by air (page 12, paragraph 176, **206a**).

For claim 18: Thompson et al. teaches that the cooling unit cools the transfer medium downstream of the transfer zone and upstream of the photoconductor (see Figure 1, wherein cooling unit **36** cools between the transfer zone and the photoconductor **20**).

14. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659) in view of Wyble (US Patent 6,322,187). Thompson et al. teaches all of the limitations of these claims as found in parent claim 1. Thompson et al. does not teach heating the surface of the substrates to a specific temperature on at least certain areas of the surface. However, Wyble teaches a substrate that is suitable of exposure to temperatures of about 150 degrees Celsius and thus the heating of a substrate to those temperatures (column 10, lines 8-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the heater as provided in the teachings of Thompson et al. to heat a substrate to around 150 degrees Celsius to facilitate the development of a liquid crystalline phase within the ink.

15. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659) in view of Spychalla et al. (US Patent 5,908,000).

Thompson et al. teaches all of the limitations of claim 27 as found in claim 1. Thompson et al. does not teach a temperature sensor assigned to the substrate and at least one of the heating element or the transport system being controlled

by a control device as a function of the signal emitted by the temperature sensor. However, Sypchalla et al. teaches a temperature sensor assigned to the substrate (column 2, lines 15-20, sensor directed at ink on the substrate) and the heating system is controlled by a control device as a function of the signal emitted by the temperature sensor (column 2, lines 18-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to teach a control device for controlling a heating system based on signals emitted by a temperature sensor for the purpose of controlling the temperature and maintaining it at a desirable level.

16. Claims 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659) in view of Moslehi et al. (US Patent 5,156461).

For claim 28: Thompson et al. teaches all of the limitations of claim 28 as found in claim 1 above. Thompson et al. does not teach that a plurality of temperature sensors arranged over the entire print width and that a heating element assigned to each of the temperature sensors with a heating output that is separately controlled within zones over a print width. However, Moslehi et al. teaches a plurality of temperature sensors arranged over the entire print width (see abstract, temperature sensor **200**) each associated with heating elements (column 19, claim 3, multi-zone lamp) where the heating output is separately controlled within zones (column 19, claim 3, heating multiple predetermined regions).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include multiple temperature sensors for sensing across the entire print width of the web with associated heating elements for separately controlling the zones to provide more controlled readings of the web temperature and for bringing each region of the web up to the optimum temperature for printing.

17. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659) and Moslehi et al. (US Patent 5,156461) as applied to claim 28 above, and further in view of Spychalla et al. (US Patent 5,908,000).

The combination of Thompson et al. and Moslehi et al. teaches all of the limitations of claim 29 as found in parent claim 28. The combination does not teach that each of the temperature sensors is a pyrometer. However, Spychalla et al. teaches that the printing device is a pyrometer (see abstract, pyrometer **200**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use pyrometers as they can detect the temperature without substantially interfering with the operation of the press.

18. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659) in view of Kurz (US Patent 5,375,518).

Thompson et al. teaches all of the limitations of claim 30 as found in parent claim 1 above. Thompson et al. does not teach that the cool device comprises a liquid-cooled contact roller that rolls off the transfer medium and that climate-controlled air flow is directed onto the surface of the transfer medium. However, Kurz

teaches a liquid-cooled contact roller that rolls off another roller to cool it (column 5, lines 64-68 and column 6, lines 1-55, cold water **80** and roller **107**) and a climate-controlled air flow that is directed onto the surface (column 3, lines 34-56, blowers **60**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the cooling elements taught by Kurz into the printing system taught by the combination of Thompson et al. for the purpose of maintaining the system at a moderate temperature.

19. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US Patent 5,640,659) in view of Watanabe (US PG Pub 2002/0110391).

Thompson et al. (US Patent 5,640,659) teaches all of the limitations of claim 31 as found in parent claim 1 above. Thompson et al. does not does not teach that the transfer roller contains at least a portion of the cooling device. However, Watanabe teaches a transfer roller for a transfer medium that is internally cooled by air (page 12, paragraph 175, **206a**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a transfer medium internally cooled by air for the purpose of maintaining the transfer medium at a desired temperature.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Johnson et al. (US Patent 5,752,442) teaches that it may be advantageous for the transfer roller to be a lower temperature as it will result in a smoother deposition of toner.

De Bock et al. (US Patent 5,893,018) teaches that is advantageous for the transfer roller to be at a lower temperature than the substrate for at least one position as the lower temperature drives moisture out of the substrate (column 24, lines 18-30). De Bock et al. teaches the cooling of the transfer rollers to below the glass transition temperature of the toner (see abstract). The glass transition temperature of certain coatings such as polyvinyl acetate is as low as 28 degrees Celsius.

Theodoulou et al. (US Patent 5,629,761) teaches that fluorosilicone rubber has a surface tension of between 22 and 35 mN/m (column 4, lines 47-60).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID BANH whose telephone number is (571)270-3851. The examiner can normally be reached on M-Th 9:30AM-8PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DHB
August 14, 2008

/Daniel J. Colilla/
Primary Examiner
Art Unit 2854